The Sanguinarian's Phlebotomy Guide

Your guide to safe and effective feeding

*Disclaimer: This document is not intended as a medical guide and is for entertainment purposes only. The authors do not condone the (fictional) activities contained herein and take no responsibility for any harm that may result from attempts to replicate anything within the document. Venipuncture is an invasive medical procedure and should therefore only be carried out by trained medical professionals.

Introduction:

Welcome, dear reader, to the Sanguinarian's Phlebotomy guide, where we will attempt to demonstrate the most effective and safe ways of getting your next feed. This manual will show you which equipment you will need; how to prepare for your bleed; how to take the blood professionally; how to mitigate risks; and finally, what to do if the worst happens.

"But I've been feeding for years, I've never had any problems!"

Even the most experienced phlebotomists need to do refresher training every few years as best clinical practice changes over time.

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One of the purposes of this document is to attempt to create effective, Sang-specific, methods of taking blood (for Sangs by Sangs).

Bear in mind that a professional phlebotomist or any medical professional has the support and resources of their entire organization behind them. They have access to state-of-the-art training; have an abundance of specialist equipment and the skills of their team to fall back on, so if the worst happens they can deal with an emergency

As Sangs, we are essentially rogue phlebotomists. We have no support, no back up, limited equipment, and unless we have prior medical training, no real idea of how to deal with emergency situations – which eventually will happen, even to the best of us!

"For Sangs by Sangs? What nonsense! Taking blood uses the same methods whatever the intended purpose!"

Sangs are not drawing blood for tests, but consumption. The method of extraction may be similar, but the need is not. In addition to this we are on our own in a non-clinical environment, which can cause unique problems inherent to our (ahem) calling. Ultimately, as Sangs we are responsible for the safety of our Donors, they put trust in us and we have a duty to do everything we can to minimise risk for them. For the cynical amongst you, try looking at it in terms of enlightened self-interest: The more you refine your methods and safe practice, the more you will be able to feed!

There are also differences in terms of practicality: Are you aware of the safe levels of ETDA you can consume? Do you really want to have to use thirty 10ml Vacutainers every time you feed? Are you using the best, most efficient equipment for your needs?

We hope that we can answer these questions and more throughout this document. This information is by no means a substitute for the real 1:1 training professionals receive and if you have the means the authors would strongly suggest you attend a phlebotomy course or at the very least purchase a practice phlebotomy kit before you put a needle into anyone.

You have been warned!

So, what is phlebotomy?

Phlebotomy is the medical procedure of drawing blood from a vein, typically in the arm or hand, through a process called venepuncture. This involves the introduction of a needle into a vein to obtain blood for (cough cough) haematological, biochemical or bacteriological analysis (Lavery and Smith 2008).

When undertaking venepuncture, it is important to understand the anatomy and physiology of the veins, circulation and surrounding structures (arteries and nerves), in order to undertake safe and effective practice (McCall, 2020). The superficial veins (median cubital, cephalic, and basilic) found in the antecubital fossa region (ACF) of the arms, are the most commonly selected sites for venepuncture (Figure 1a), as they are easily accessible and cause minimal discomfort for the patient (Brooks, 2017). Metacarpal veins (Figure 1b) can also be used as they are easy to visualise, and palpate; however, the use of these veins may be more painful and difficult in donors with poor skin elasticity. (McCall, 2020).

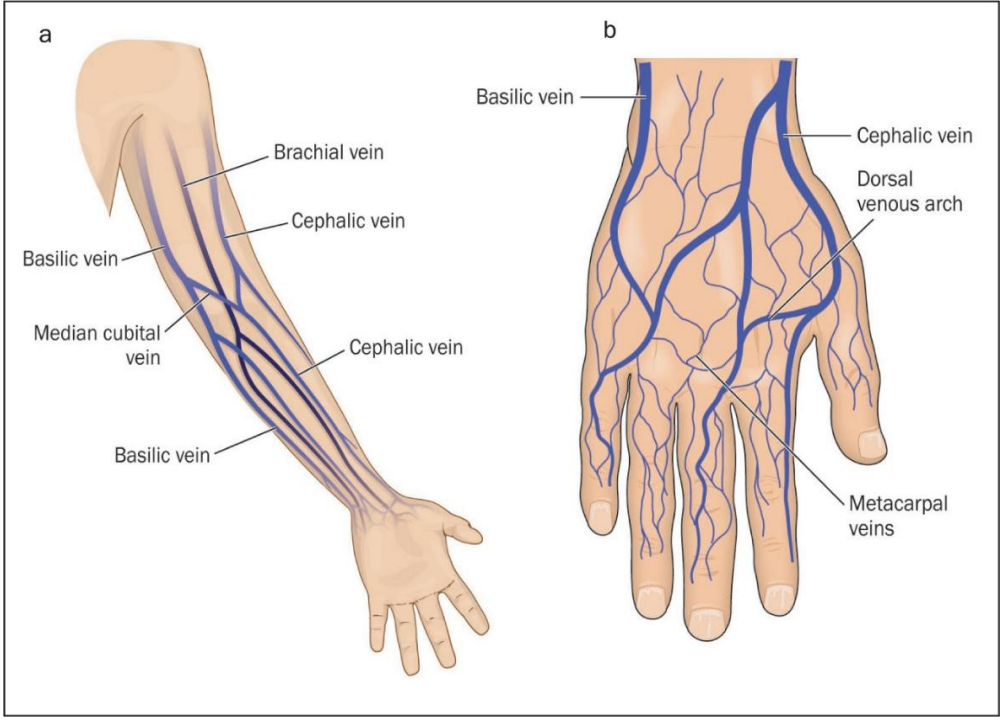


Figure 1. Veins of the arm and hand

"No wait, rewind. What are veins for again?"

Glad you asked. Veins are blood vessels that carry blood towards the heart (unlike arteries which carry oxygenated blood from the heart to the body). In the human body, there are two types of veins: deep veins and superficial veins. Deep veins are located deep within the body and are typically not visible, while superficial veins are located closer to the surface of the skin and are often visible.

Veins also contain valves that ensure the blood flows in the right direction: towards the heart. These valves should be avoided when stabbing someone as it can cause venous insufficiency - a condition where veins have difficulty returning blood to the heart.

Veins are at a higher risk of collapsing (even professionals will have it happen) when using a needle that is too large or has a blunt tip; when the same vein is accessed repeatedly or when improper technique is used. So know your stuff, have proper equipment, and vary what sites you draw from.

"So how do I pick the vein I want to stab?"

Good question. Although the arm is the most commonly used site for venipuncture, it is important to assess the most appropriate site for each donor. There are important things to bear in mind when assessing a donor's veins:

- Avoid arms affected by a stroke
- Avoid arms impacted post mastectomy, node dissection, or surgery of any kind
- Avoid arms affected by lymphoedema

- Choose arms/hands with good capillary refill (that's good circulation to you and me)
- Choose the non-dominant arm (if this is the donor's preference)

"So what should I be looking for in a vein?"

To make your life easier, your vein selection should based on several factors:

- Veins which are easily palpable (you can feel them – and we do mean feel, don't rely on sight)
- Veins with the largest diameter
- Avoid fragile and sclerosed veins (veins that have been treated with sclerotherapy, causing them to collapse, seal shut, and scar)
- Avoid veins irritated from previous use (switch up your sites)
- Avoid visible valves (lumpy bits)
- Avoid veins with fibrosis (excessive buildup of fibrous tissue within the vein walls – thick veins)
- Avoid veins close to arteries (feel if there is a pulse, if there is then is an artery, try not to stab this)
- Avoid the wrist. This can cause really serious damage to your donor. Do NOT puncture the wrist.

"So I found a spot but it looks a bit weird, can I still stab it?"

Woah there stabby-stabby, I know you're sangry, but you need to make sure you avoid certain things:

- Avoid sites with haematomas (bruises), oedema, or thrombus
- Avoid sites with a fistulae or vascular graft
- Avoid areas of inflammation
- Avoid areas with burns or scars

Basically, don't go anywhere that's wounded or otherwise damaged, including by your needle.

Donor Prep:

"Okay, so what can I do to make this all easier and safer?"

Since your donor is also a living human-person, they are unfortunately subject to biological reality. That means they need to make some preparation too if you don't want to both have a very disappointing evening.

There are a few things you can do to minimise risk to the donor and help ensure a smooth, red ride:

Make sure your donor is hydrated. Dry blood is thick blood and will be harder to draw. Adequate hydration will also help keep your donors blood pressure from dropping which can cause them to pass out.

Make sure the environment is warm but not too hot. Cold blood is also thick blood and will be harder to draw, feel your donors hands, are they cold? If yes then warm that poor soul up before you start! Too hot? If the ambient temperature is too high this can lead to *Vasal Dilation* (vein walls expanding). This can cause a huge drop in blood pressure and lead to your donor passing out.

Has your donor eaten? Low blood sugar is a great way to end up with a passed-out donor. Slow-release carbohydrates like oatmeal are great and it is generally good practice try to make sure your donor has had good food and fluids before you swoop in! A quick fix is glucose tablets, will provide the donor with a healthy amount of blood sugar before you start, can also be handy if they start looking peaky!

Is your donor in good health? Never hurts to ask, colds and flu can lead to you both having a bad time with the feed. Again, try to keep your donor conscious!

Are you and your donor tested for bloodborne pathogens? I know this seems like a no-brainer but this is blood drinking after all. HIV and Hep are real risks!

Is your donor anxious? Adrenalin can not only negatively affect the taste of the blood but can also make your donor harder to bleed. Be kind, work on your "bedside manner". A calm donor is a tasty donor!

Has your donor had blood taken before? If this is your first time with the donor then take the time to find out if they have had prior experience with having blood taken. Did they pass out? Which spot did the blood get successfully taken from? How did they feel afterwards? Asking these things will generally make your life easier.

Have you or the donor been drinking or taking illicit drugs? No judgement here, the fact is that alcohol and other substances can not only affect the donors blood but seriously compromise their safety (and yours for that matter). Alcohol thins the blood and means the chances of a haematoma or uncontrolled bleed in your donor are higher. Alcohol also eventually dehydrates the body (hangovers) so conversely, this can lead to the blood being harder to draw. If you are under the influence yourself then this can increase the chances of something going wrong (for obvious reasons). Substances can also complicate the matter of consent. Is a drunk yes, still a yes?

Does your donor understand the risks? I do hate to go on about this and I'm not trying to waggle any fingers, but medical consent equates to *Informed Consent.* Informed consent means that your

donor understands (and has the ability to understand) what is going to happen and understands the risks, as the person holding the needle it is on you to make sure that they have this information. If at any point your donor changes their mind then No means NO!

Venepuncture Kit:

"Can I drink now?"

Not without the right equipment you can't. Let's go through what you will need.

There are a few different methods of drawing blood, below you can see the most common equipment you will need for a successful blood draw:

- Tourniquet
- Cleansing wipe containing 2% Chlorhexidine gluconate in 70% Isopropyl alcohol
- Non-sterile latex free gloves
- Blood collection system (Purple top Vacutainers containing ETDA, Vacutainer holder, bags etc).
- Safety sterile needle of appropriate size for the vein (21-19g Butterfly)
- Cotton ball or gauze swab
- Tape or adhesive plaster
- Sharps container
- Pillow

How To Take Blood:

It's sipping time!

Step 1: Wash your hands and get your kit together.

Try to choose a clean, tidy location where the donor can sit comfortably. If possible, chose a spot where your equipment can be placed right next to your dominant hand. Place the pillow under the arm of your donor (this will make it more comfortable for them and help keep the arm still).

Step 2: The tourniquet.

A tourniquet is used to make it easy to find and puncture a vein. Your tourniquet should be applied 5 – 10cms above the site of the intended venepuncture and should be tight enough to compress the veins but must not obstruct the arterial circulation of the limb. If the arm becomes cyanosed (turns blue), the tourniquet has been on too long and it should be immediately loosened and removed. The tourniquet must be removed as soon as blood flow is achieved, or the flow of blood into the collection device will be impaired.

Step 3: Finding a nice, juicy vein.

Both arms should be inspected to select the most appropriate site for venepuncture. Inspection and palpation (light pushing) of the veins will reveal the position of the veins, direction in which they run and their size and other physical features. The vein should be straight and feel soft, cylindrical in shape and 'bouncy' when lightly pressed.

Important: The wrist area MUST NOT be used for venepuncture because of the unacceptable risk of hitting the radial or ulnar nerve which can cause temporary or permanent nerve damage and affect a persons ability to open and close their hand. The wrist is also an easy place to hit an artery (try not to do this).

Step 4: Site preparation.

Although there is some controversy about whether skin cleansing of the site is necessary, the Infusion Nurses Society guidelines (Gorski et al, 2021) state that skin antisepsis should be performed prior to all venepunctures to prevent the risk of infection.

If you're using a blood bag, place it on a clean area below the donor, ensuring the lines and bag are primed.

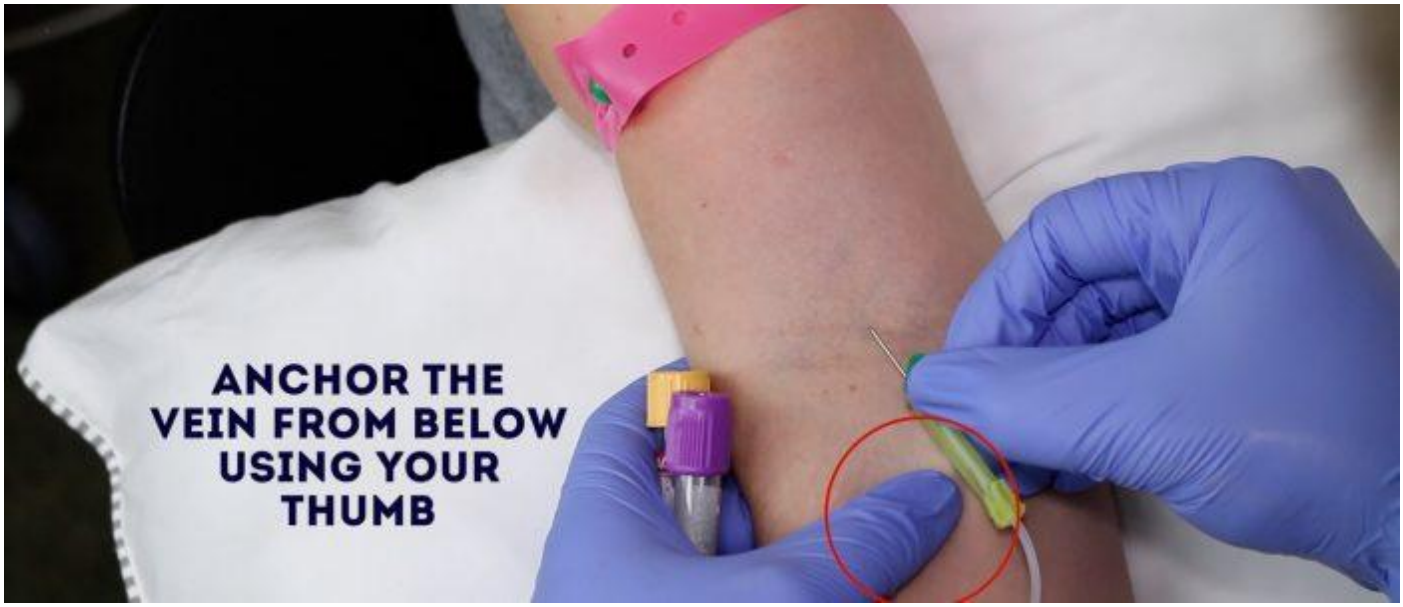
Step 5: Just a little prick!

Remove the sheath from the needle and inspect it for damage. If it looks dodgy in any way, get a new one. Don't take the chance.

Step 6: Compose yourself. Try not to drool!

Step 7: Pin the vein.

Use one hand to apply traction on the skin a few centimetres below the site and pin the vein, drawing it back by a few millimetres.



Step 8: In we go!

With the bevel (the hole in the needle) upwards, insert the needle at about a 10-30 degree angle (see fig 2). Some needle equipment (such as butterflies) will allow you to see if you are correctly situated in the vein with a visual flashback; this means you have entered the vein and are ready to draw the blood.

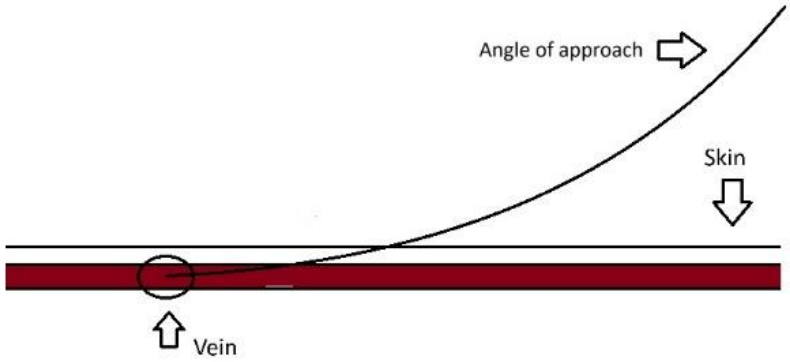
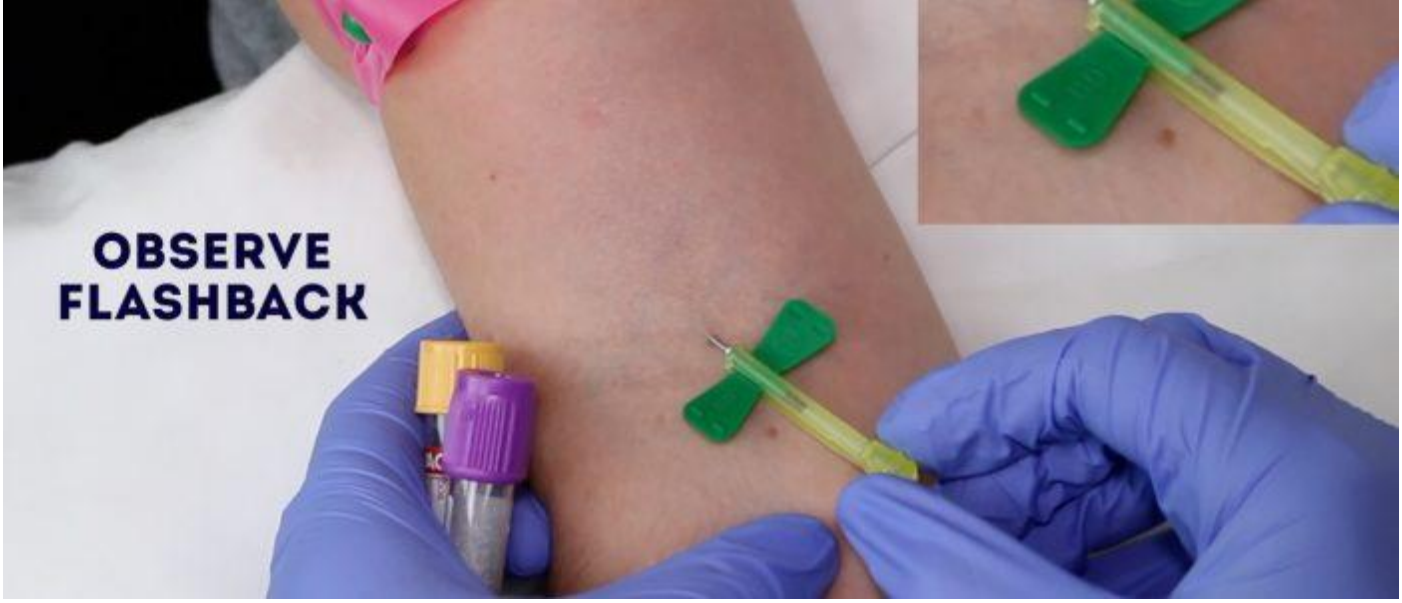


Figure 2. Angle of approach



Step 9: Release the tourniquet (so the blood will flow).

Step 10: Attach the collection device.

If this is a vacuum collection tube then push the tube into to the end of the needle inside the plastic holder. It is also possible to use a 10-30ml syringe to draw the blood slowly. *Note - this method will either require immediate consumption or use of an anticoagulant solution in the syringes for storage.

Allow the required blood for that specific collection container to be collected, with vacutainers this is usually to top of label.

Remove the vacuum collection tube and invert to mix anticoagulant with blood.

**Repeat last three steps as necessary.*

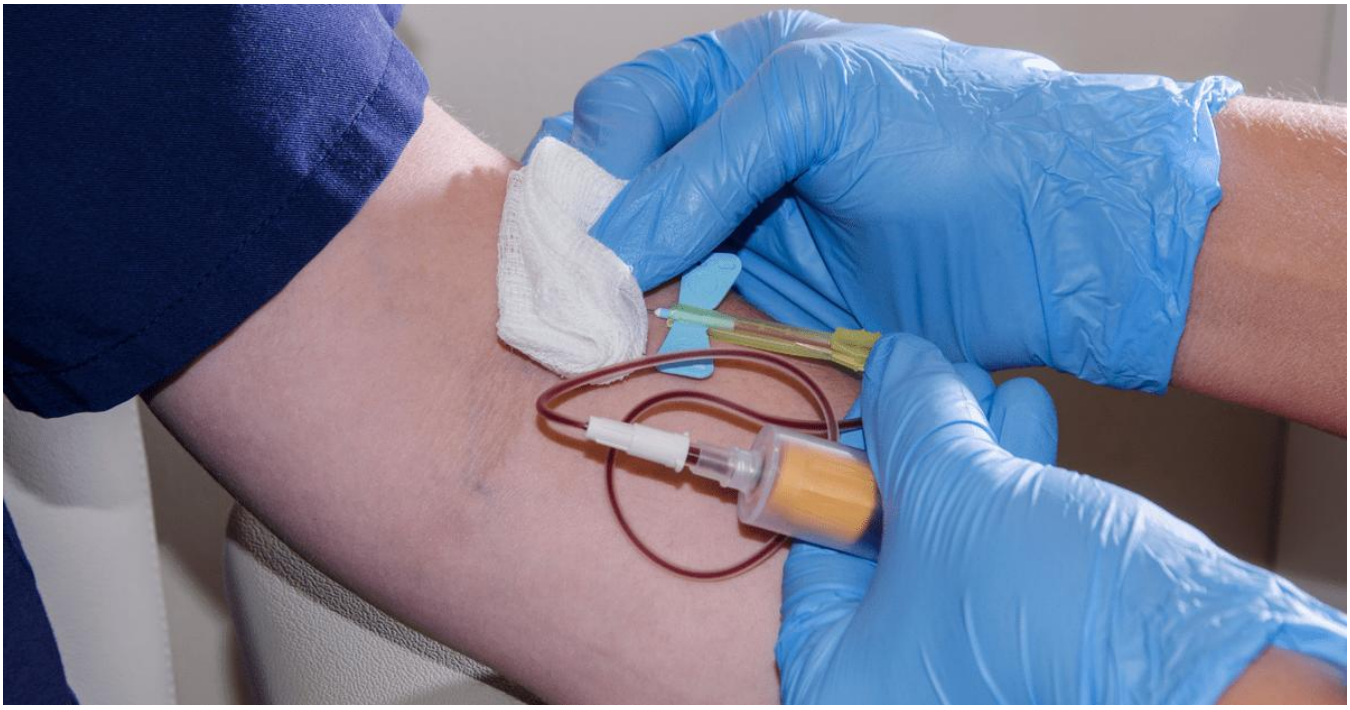
Note: You should always have your blood collection device below the insertion site Let gravity work with you.

Step 11: Puncture repair.

Once all the required blood has been obtained, hover the gauze or cotton over the needle site (do not press down yet).

Step 12: The pull-out method.

Retract the needle and put pressure on the site with the gauze or cotton in one motion. Push hard to prevent bruising and get your donor to hold it there and apply pressure.



Step 12: Don't be a litter bug!

Retract your safety needle with your thumb and dispose of it in the sharps container. Then, tape the gauze or cotton down to your donors arm.

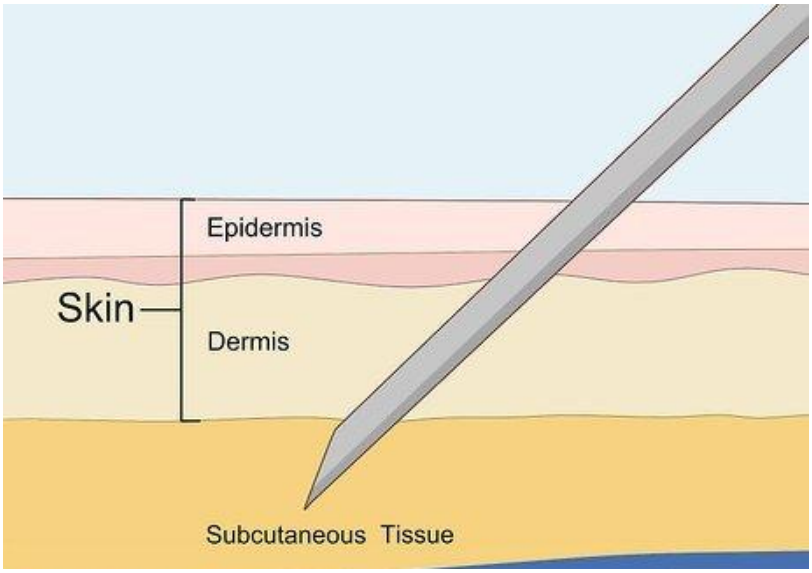
Step 13: Enjoy!

Top Tips:

"I did everything right, the blood just won't flow, am I just a shoddy Sang?"

So, you stabbed the donor but no drippy-drippy-yum-yum? Don't tie yourself up in knots of self-recrimination just yet, try some of these things to troubleshoot your bleed:

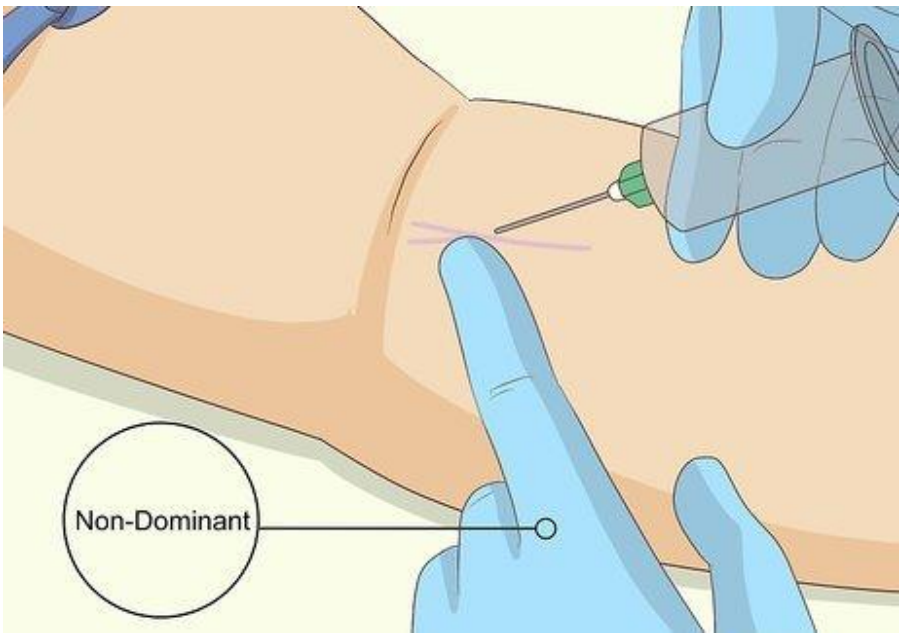
Redirecting the Needle: Back the needle out until the bevel is just below the skin. This preliminary action allows you to safely adjust the needle's position. Be careful not to withdraw the needle completely or else you risk losing the tube's vacuum and starting a hematoma when the bevel exits the skin.



Palpate the vein using your non-dominant index or middle finger. The goal is to locate the vein in relation to your needle.

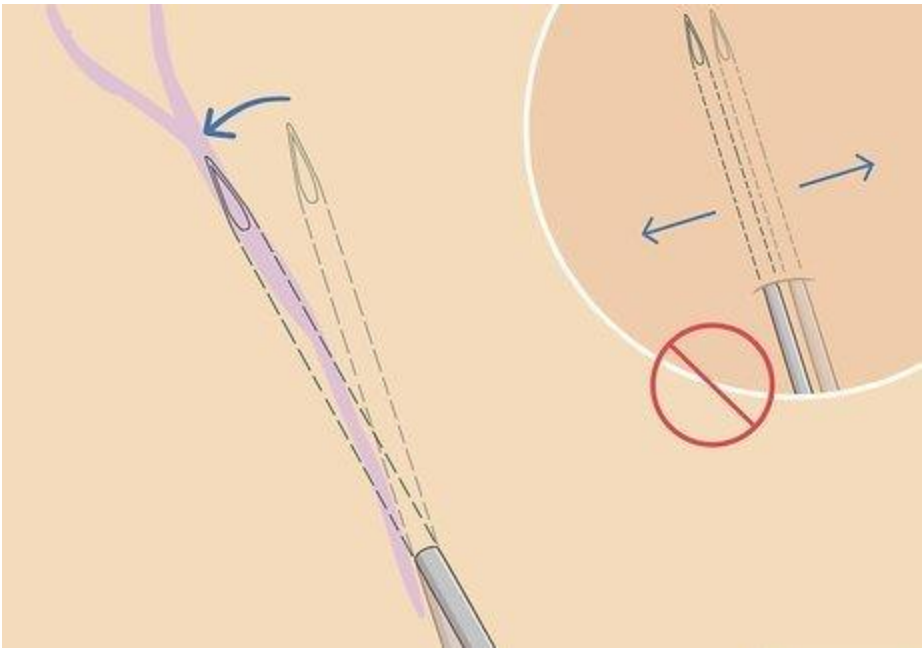
- Remember that veins should ideally feel bouncy. Hard and dense structures may be nerves or tendons. Subcutaneous tissue feels squishy and muscle feels hard. If a vein feels hard, it may be scarred or sclerosed.

- Warning: Make sure you are confident that the structure you're palpitating is indeed a vein. Inadvertently nicking a nerve causes intense pain. Additionally, a hematoma may compress the nerve and lead to long-term damage.



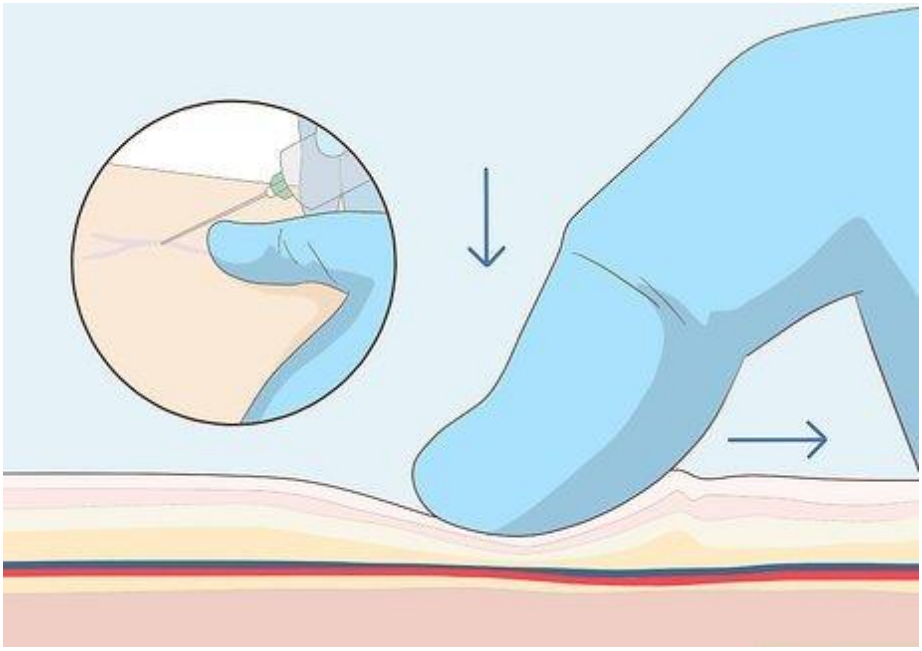
Slowly adjust the needle's angle and position to line it up with the vein.

- Warning: Do not make lateral (side-to-side) movements with the needle. This is very painful, risks damage to underlying structures, and widens the needle hole to prolong bleeding time.

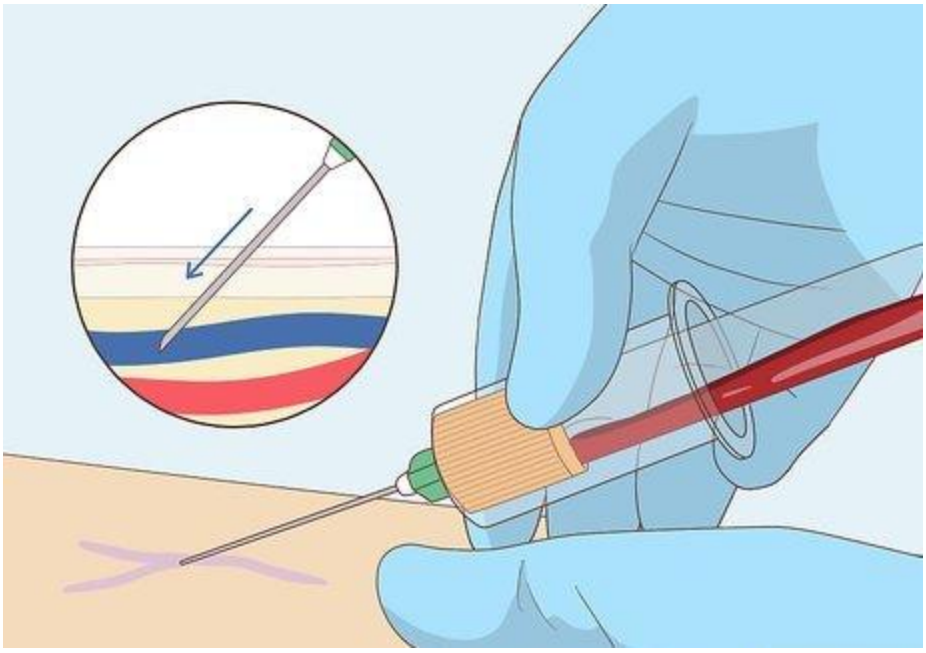


Anchor the vein as hard as you can. To do this, position your non-dominant thumb slightly inferior to the vein and pull the skin and subcutaneous tissue downwards taut. This stabilizes the vein to prevent it from rolling.

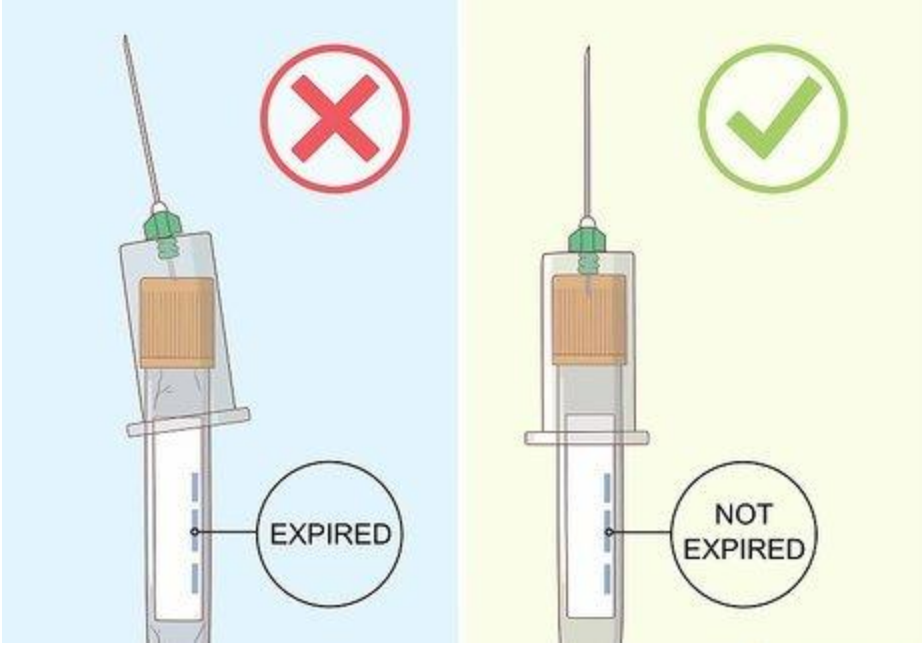
- Elderly people often have fragile skin and veins that roll quite easily. While you probably shouldn't be drawing from someone with advanced age for a variety of reasons, your donor might have veins that roll regardless. When a vein rolls, the needle tends to push the vein aside rather than penetrating through. Therefore, your anchor should be gentle but firm to prevent the vein from moving away from you.



Advance the needle back further into the skin, watching for blood flow or a flashback. Observe the donor and stop if they feel unbearable pain. If you establish blood flow, fill your tubes in the correct order of draw while keeping a stable anchor.



Check your tube. Blood may not flow sufficiently if you are using an expired, damaged, or dropped tube due to an inadequate vacuum. Check the tube to make sure it is properly positioned in the holder and the inner needle has penetrated through the rubber stopper. Maintain control of the needle when changing tubes.



Troubleshoot an incorrect needle position. Although the above section describes the basic steps to redirect a needle, you may need to perform slightly different manoeuvres to correct needle position as described below.

- Needle not inserted far enough: The bevel is in the skin or subcutaneous tissue and has not penetrated the vein. This is a common occurrence when drawing from obese people. To correct this issue, slowly advance the needle forward.

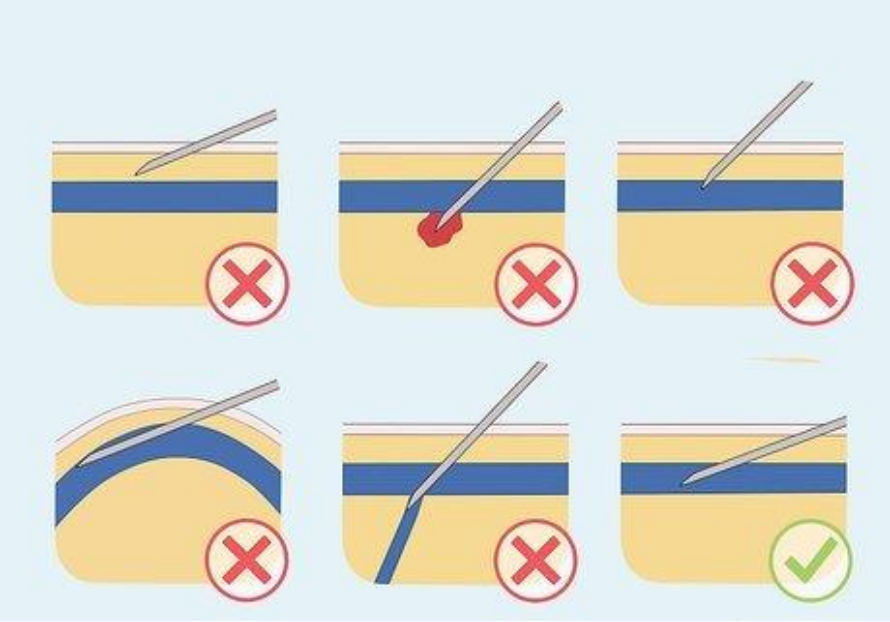
- Needle is partially or completely through the vein: The bevel penetrates the posterior wall of the vein. A small spurt of blood may appear in the hub as the bevel travels through the vein, but no blood flow is established. This happens when the needle is advanced too far, too quickly, or at too steep of an angle. A bevel that is partially or completely through the vein has the potential to cause a hematoma when blood leaks out of the vessel into the surrounding tissues. To correct this issue, anchor the vein and withdraw the needle slightly until blood flows..

- Needle is only partially in the vein: The bevel is beneath the skin and has begun to penetrate the vein, but not completely. Blood flow may be very slow. To correct this issue, anchor the vein and slightly advance the needle.

- Needle is against the vein wall: The bevel is pressed against the wall of the vessel, impairing blood flow. This may happen if there is a bend or fork within the vasculature. To correct this issue, either withdraw the needle slightly or rotate the assembly a quarter-turn.

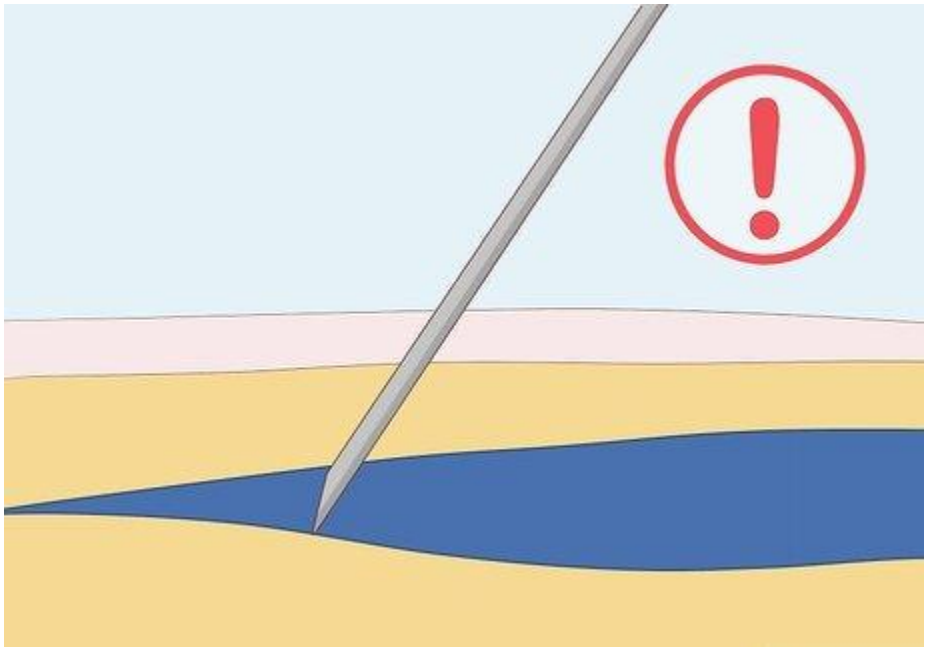
- Needle is in contact with a valve: The bevel is stuck in a venous valve, impairing blood flow. A subtle vibration or buzzing sensation may be felt as the valve attempts to open and close. This may happen if there is a bend or fork within the vasculature. To correct this issue, withdraw the needle slightly.

- Needle is beside the vein: The bevel pushed and slipped past the vein rather than penetrating the wall, a phenomenon known as "rolling". This most often occurs when the vein isn't securely anchored and taut. To correct this issue, hold a firm anchor and attempt a redirect.



Recognize when a vein has collapsed. The vein's walls constrict and draw together, stopping blood flow. This can occur when the tube's vacuum is too strong, or when the tourniquet is tied too tight or too close to the venipuncture site or removed altogether.

- If you are using a butterfly, try to retie the tourniquet around the patient's arm to increase pressure and re-establish blood flow.
- You may also remove the tube, wait a few seconds for blood flow to resume, and then engage a short drawtube.



Emergency Tips:

"OMFG, my donor just……"

So, your feed took a wrong turn huh? Well, this is the fun of rogue phlebotomy, you can try and deal with yourself or call an ambulance (we recommend the latter). Here are some tips in case the worst happens.

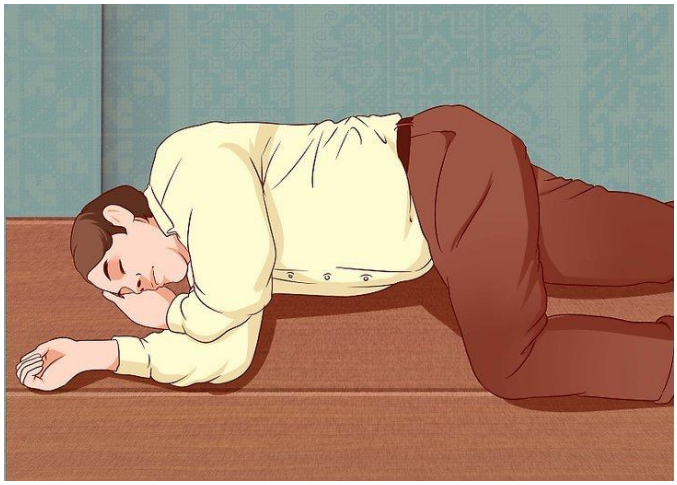
The number one thing is to NOT PANIC. Buy the ticket, take the ride - you're performing an unlicenced medical procedure, WTF did you think would happen?

Important: Stop the procedure and remove the needle if:

- An artery has been punctured (characterized by bright red, pulsating blood)
- A nerve has been nicked (patient may complain of an electrical sensation up and down the limb)
- A hematoma starts to form (a bubble under the skin starts to rapidly appear at the site)
- The donor loses consciousness or starts seizing (kind of self-evident…)
- Signs that the donor might pass out: Sudden sweat on brow, pale complexion, nausea, slurred speech, drowsiness.

If the donor passes out then immediately remove & dispose the needle safely (do NOT forget this) and elevate the donors' legs above the heart. This will cause blood to flow back to the head. If the donor remains unconscious for more than a few seconds, then firmly squeeze (pinch) the trapezoid muscles over the shoulders and repeat their name is a loud clear voice. If donor starts to come round, then make sure they are comfortable, legs are elevated, and windows are open to ensure a supply of fresh air. Do not give fluids immediately as the donor may still be groggy and this will pose choking risk. Once donor is speaking in full sentences then offer water. If available give donor glucose tablets or a sweet drink/candy.

If donor remains unconscious for more than 30 seconds, check breathing, place them into recovery position (see diagram), monitor closely and consider calling an ambulance - by consider we mean totally call an ambulance you dolt, like now! Always remember: Explaining something going wrong is potentially embarrassing and distressing. Explaining a corpse is impossible.



Handy Links:

Geeky Medics – Your one-stop shop for all medical information.

NHS Health – Free impartial medical advice.

WHO Guidelines on Drawing Blood: Best Practices in Phlebotomy.

Unconsciousness - first aid.

Venepuncture Video.

Difficult bleeds Video.

Recovery Position Video.

EPA – Safe EDTA levels.

Training video for warm, fresh, whole blood transfusion procedures.

Using a syringe to draw blood Video

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